1.0 Overview

The purpose of this pilot project is to demonstrate one way to use regulation in a Massachusetts community to better protect water resources from the significant hydrologic changes that are occurring throughout the state related to development. Two main aspects include 1) the development of performance based Environmental Overlay Districts to provide a better 'water balance' in developing areas, and 2) the development of a list of possible 'offsets' to increased water supply withdrawals and wastewater discharges.

The project was funded by the Commonwealth of Massachusetts Riverways Program, with additional funding from the Town of Lancaster via a related ongoing demonstration program called the Integrated Water Resources Management Program or IWRM. That larger project was funded largely by the Department of Housing and Community Development. The Riverways Grant is a *Keeping Water Local Demonstration Project*, and may also serve as a statewide example of the type of project that could be done as a preliminary step to or as part of a Comprehensive Wastewater Management Plan (CWMP) or an IWRM.

The Town of Lancaster is a small but rapidly growing community located in a historic, significant environmentally sensitive area. The Town is experiencing rapid growth as a suburban bedroom community for its larger and more populous neighbors like Leominster and Worcester, but it is also well within commuting reach of Boston. The Town lies in the Nashua River Basin, at the headwaters and confluence of the North and South branches of the river. Much of Lancaster thus drains to the 10,000 acre Central Nashua River Valley Area of Critical Environmental Concern, home to a number of endangered species as well as the Fort Devens military reserve.

There are many problems facing Lancaster, including a lack of economic development in spite of its proximity to Route 2, largely due to the unavailability of water and sewer service in this North Lancaster area. This has resulted in a relatively high tax rate. In addition, growth patterns in Lancaster demonstrate a distinct tendency towards sprawl, with commercial development beginning to occur on Route 70 near Route 2, however, the types of development are not necessarily able to provide as much in terms of local jobs and tax base as desired due to the lack of sewer and water. Much, but not all of the existing development in Lancaster lies on areas with relatively poor soil conditions.

A Comprehensive Wastewater Management Plan (CWMP), or wastewater facilities plan, is ongoing for sewering of South Lancaster with likely discharge to the Clinton Wastewater Treatment Plant to the south. Although this CWMP is nearing completion, it only addresses the southern portion of the Town. Additionally, CWMPs focus on sewering needs with little consideration of how the new sewers might impact population density, drinking water, stormwater, waterways, recharge and wetland resources. The result can be unintended increases in development, which may in turn increase runoff, water supply withdrawals and potentially the export of wastewater from the Town or

basin. These combined impacts can have detrimental effects on local rivers, streams and groundwater aquifers, by decreasing recharge and the replenishment of aquifers and baseflows, while withdrawing more and in some cases exporting it away as wastewater.

This problem is becoming more common in Massachusetts and other urbanizing areas, as evidenced by increased flooding and declining streamflows in summer. Streams and rivers receive reduced sustainable base flows due to less recharge, and the increased stormwater runoff contributes high concentrations of pollutants and higher temperature water from its passage over hot asphalt and other surfaces. These pollutants, including increased temperature, can dramatically affect aquatic life. Channel erosion and sedimentation is another common problem, with increased runoff velocities and volumes occurring on a more frequent basis. All of these factors have detrimental effects on aquatic habitat.

To prevent these problems from occurring in the central and northern portions of town, Lancaster is in the process of piloting an Integrated Water Resources Management Plan (IWRM) approach (instead of a CWMP) as a Smart Growth technique in these areas. The Fort Devens military reserve is not included in the study area since Lancaster does not have any jurisdiction over the military reserve. The IWRM Plan[1] is a multi-discipline approach that will integrate planning for wastewater with water supply and stormwater by considering all of these aspects of infrastructure to better conserve water resources by maintaining a more natural hydrologic cycle, whereas CWMPs traditionally focus only on wastewater.

The goal of the EOD is to minimize the impacts of development by better planning for growth.

Although the IWRM will help to maintain the water balance by sustaining base flows, it does not address the other detrimental effects of increased runoff, particularly increased pollution, warming of streams and channel erosion. To combat these issues, Lancaster is developing an environmental overlay district (EOD) that addresses both water quantity and quality issues. The EOD is a regulatory control that guides development within the Town to help maintain the water balance while addressing water quality. The intent is that the program developed with this pilot could be used in other communities as a preliminary step done before a CWMP or IWRM, one that would lay the groundwork to prevent unintended consequences of sewering by putting a better regulatory framework in place prior to beginning wastewater facilities planning. It also provides a significant tool in that the EOD model can be used to evaluate future sewering and other scenarios in terms of their impacts on the hydrologic cycle.

An EOD consists of one or more designated areas where specific requirements for development are put in place up front so that the hydrologic cycle, fisheries, and water

[1] Massachusetts DEP's IWRM scope has not yet been released but is expected to consider many of the same issues as are being considered in Lancaster's Pilot IWRM.

supplies are better protected before development intensifies, as it often does once water and sewer services become available. The goal of the EOD is to minimize the impacts of development by better planning for growth. EOD areas are selected where a greater level of protection is needed. Lancaster is developing EODs to provide better:

- Pollutant removal
- Temperature control
- Groundwater recharge
- Flood control
- Aquatic habitat protection
- Aquifer sustainability

Each EOD will be accompanied with performance criteria that set the foundation for new development projects to meet the objectives outlined above.